REMARKS

This is in response to the Office Action of August 17, 2006.

Applicants have cancelled claims 1-21 without prejudice to their right to file a Divisional Application to the non-elected claims.

With respect to the Examiner's objections to the claims, it is believed that the amendments to claims 26 and 28 correct the typographical errors.

With respect to the remaining objections, Applicants respectfully disagree with the Examiner's assessment that the claims are drawn to means for modeling. The claims are drawn to an apparatus for analyzing microarray images. This apparatus includes means for modeling a microarray process.

The Examiner's rejection focuses on a computer related process. Indeed, the rejections seem to be based on the assumption that a process is claimed. Indeed, the Examiner's comments in the paragraphs bridging pages 3 and 4 of the detailed action relate to a claimed process. However, the invention is directed to an apparatus. Independent claim 22 claims an apparatus for analyzing images; claim 23 specifies that the data comes from two channels; and claims 24, 25, 32, and 33 specify in such apparatus the specific type of data being modeled and analyzed. Accordingly, the invention is not a computer process that simply calculates a mathematical algorithm that models something. It is an apparatus that analyzes images and, in doing so, employs means for modeling something. That something, as broadly stated in the independent claim, is modeling the process. Accordingly, it is requested that the Examiner withdraw the rejection.

Further, even if the claims were drawn to means for modeling, which they are not, it is not improper to specify the feature being modeled. Indeed, the specification describes why it has been difficult to model certain types of information in the past; and how the invention

makes it possible to derive or analyze information in a way not previously available.

The Examiner's rejection under 35 U.S.C. 112 is not understood. The preliminary discussion suggests that the invention is drawn to a process. The rejection likewise suggests that the invention is a process. As such, it is not clear how the rejection is relevant to the claimed apparatus.

The Examiner's rejection of the claims 22-35 based on Stoughton et al, or Friend et al., is respectfully traversed for the reasons set forth below.

Stoughton et al. and Friend et al. bear little relevance to the invention. Stoughton is concerned with how well a network model represents a biological pathway, given a series of measurements. These measurements may come from a microarray experiment, or some other experiment. Thus, one of the possible inputs to the method in Stoughton may be output of an image analysis method. While Stoughton describes various algorithms to model biological networks, once image analysis has been performed, it does not teach or suggest any algorithms or models for the image analysis stage itself. Stoughton is thus concerned with an entirely different part of the process than the claimed invention.

Further, although Stoughton refers to the general procedure involved in a microarray experiment, it mentions that image analysis is to be performed. It also describes a standard procedure of taking the ratio of two channels during the image analysis stage, which is inherent and an essential part of any two channel microarray experiment. Stoughton also mentions that despeckling of the images may be required as may be some form of correction for cross-talk (commonly known as normalization). However, none of these basic concepts teach or suggest the concept of the claimed invention. In particular, the reference does not provide any indication as to how one could use models/algorithms to improve image analysis to increase accuracy as set forth in the

application. In addition, the reference makes no mention of the concept which includes the use of specific knowledge of the microarray process via specific models and algorithms to improve accuracy of the image analysis, (for example, the probe distribution influences the spot profile in both channels of the image in a statistically predictable fashion and can therefore be used to separate noise from signal more intelligently).

Accordingly, Staughton provides only a general description of two colored DNA micro array experiments, including an indication that image analysis is required. However, it does not provide any indication of how one could use specific models/algorithms to improve the image analysis and thus increase accuracy.

Friend et al. is concerned with the choice of nucleotic acid to be placed on the microarray, and in particular, how efficiently these fragments might be expected to hybridize to a target polynucleotide sequence. This reference is primarily concerned with deciding what should be placed on the array to optimize results. However, the reference provides not information on how to improve the image analysis, which is an important part of the optimization that follows design of the microarray slide in probes themselves. The algorithms and models described in Friend et al. serve an entirely different purpose than the algorithms and models in the invention, and there is no suggestion that algorithms and models would have any other effect on the teaching in the reference.

It is therefore respectfully requested that the Examiner reconsider his rejection of the claims, the allowance of which is earnestly solicited.

If additional fees are required, the examiner is authorized to charge deposit account 04-2223 or credit any overpayment thereto.

Respectfully submitted,
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